but the present preliminary results suggest that the differences found in the slimes of these strains, as represented by the fractions analysed, are not sufficient to account for the host specificity of these plant pathogens.

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EUGENICS

Urinary Excretion of β-Amino-*iso*butyric Acid in Mongolism

Various studies have suggested that the excretion of β-amino-*iso*butyric acid in human urine is under genetic control[1–4]. This amino-acid is derived from the metabolism of thymine via dihydrothymine and β-ureido-*iso*butyric acid[5]. Variation in excretion of β-amino-*iso*butyric acid may be controlled by a single gene pair, with high excretors being homozygous for a single recessive gene and low excretors being either heterozygous or homozygous for the dominant allele[6]. It also has been suggested that low and high excretors may differ in their metabolism of β-amino-*iso*butyric acid[7]. An increased incidence of high excretors has been found in certain ethnic groups, notably the Athabascan and Apache Indians of North America, the Black Caribs of British Honduras, and the Chinese and Japanese[4,6,8]. High excretors of β-amino-*iso*butyric acid are relatively uncommon in populations of Caucasian origin[1,2,3].

Wright and Fink[9] have reported an increased incidence of high excretors of β-amino-*iso*butyric acid in children who have mongolism (43 per cent) compared with normal children (7 per cent) and children who have unclassified mental deficiency (17 per cent). A proof of this finding was desired. A 47th chromosome has been observed in the cells of mongols[10,11], and this extra chromosome may have biochemical effects.

In the present study, urine specimens were collected from 51 mongoloid children, 57 non-mongoloid mental defectives, and 61 normal children and were frozen until used. The creatinine concentration of each specimen was determined by a modification of the Jaffe reaction. Aliquots of urine containing 25 μgm. of creatinine were chromatographed two-dimensionally on Whatman No. 1 paper in pyridine/acetone/3 *N* ammonia (45:30:25) followed by *iso*propyl alcohol/formic acid/water (8:1:1). The chromatograms were sprayed with 0·2 per cent ninhydrin in 95 per cent ethanol, dried, heated at 80°C. for 5 min., and finally were sprayed with 0·25 *N* nickel sulphate solution. With this procedure, as little as 0·25 μgm. of β-amino-*iso*butyric acid can be detected readily. When β-amino-*iso*butyric acid was detected in a urine specimen, the amount was determined on paper chromatograms by visual comparison of spots obtained from appropriate aliquots of urine with those obtained from graded amounts of the authentic compound. Chromatography was carried out in a special 'smog'-free room, in order to avoid the destructive effects of oxidants present in the Los Angeles atmosphere.

Table 1. Urinary excretion of β-amino-*iso*butyric acid by mongoloid and normal children and by non-mongoloid defectives

β-Amino-*iso*butyric acid μgm./mgm. creatinine	Number of Subjects		
	Mongoloid	Normal	Non-mongoloid defectives
Less than 70 (0–66)	49	57	54
More than 70 (88–288)	2	4	3
Total	51	61	57

The data on urinary excretion of β-amino-*iso*butyric acid are presented in Table 1. Only 4 per cent of the mongols, 5 per cent of the non-mongoloid mental defectives, and 7 per cent of the normals are high excretors; that is, individuals excreting more than 70 μgm. of β-amino-*iso*butyric acid per mgm. of creatinine. The range of 70–200 μgm. per mgm. of creatinine was suggested by Harris[1] for high excretors following an examination of 345 subjects, and also was used by Calchi-Novati *et al.*[2] with 792 subjects. A distinct high excretor group was not observed by Gartler in one study[3]: more recently, however, Allison, Blumberg, and Gartler[6] have presented results which appear to confirm the range selected by Harris[1] for high excretors. The low percentage of high excretors found among mongols in the present investigation is comparable to that reported by others[1,2,3] for normal individuals of Caucasian origin.

The excretion of β-amino-*iso*butyric acid was expressed by Wright and Fink[9] in terms of urine volume. The significance and reproducibility of this parameter are questionable because the dilution of different urine specimens can vary greatly; it is more reliable to use a timed collection period or volumes containing equivalent amounts of creatinine. The present results, nonetheless, were recalculated on the same basis for the purpose of comparison: 6 per cent of the mongols, 5 per cent of the non-mongoloid defectives, and 10 per cent of the normal subjects excreted 0·5 to 9·0 millimoles of β-amino-*iso*butyric acid per litre of urine, which was the range designated by Wright and Fink[9] for high excretors. The difference in the percentage of high excretors in the three groups of subjects is not significant, regardless of the manner of computation, and it is concluded that the incidence of high excretors is not increased in mongolism.

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